UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,372	04/09/2001	Morten Peter Meldal	11225.13US01	9680

23552 7590 07/27/2004

MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER	
TRAN, MY CHAU T	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/829,372	MELDAL ET AL.	
	Examiner	Art Unit	
	MY-CHAU T TRAN	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-19 and 48-63* is/are pending in the application.

4a) Of the above claim(s) *15,16,18,49,51,52,54-57 and 61-63* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-14,17,19,48,50,53 and 58-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment filed 4/23/04 is acknowledged and entered. Claims 10-13, 17, and 53 have been amended. Claims 58-63 have been added.

2. Claims 1-9, and 20-47 were canceled, Claims 1, and 10-19 were amended, and Claims 48-57 were added by the amendment filed on 2/24/03.

3. Applicant has elected the following species for the elected invention (Claims 10-19, and 48-57):

a. A species of building block unit (protecting group): *N*-sec-butyl-glycine monomer.

b. A species of building block linker (functional group): amide bond.

c. A species of template molecule: solid substrate.

(i) A species of solid substrate: polystyrene.

(ii) A species of functional group: amide functional group.

4. Claims 10-19, and 48-63 are pending.

Election/Restrictions

5. Newly submitted claims 58-63 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

I. Claims 10-19, 48-60, and 62, drawn to a method of preparing a derivatized template, classified in class 436, subclass 528.

II. Claim 61, drawn to a derivatized template, classified in various classes and subclasses depending on the structure of the derivatized template for example class 536, subclass 25.3.

III. Claim 63, drawn to a uni-chemo protected compound, classified in various classes and subclasses depending on the structure of the uni-chemo protected compound for example class 560, subclass 8.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group II and Group III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions as claimed have different required structure that have different functions and effects. For example the derivatized template of Group II has the structural elements of a "template" and "target groups" and the uni-chemo protected compound of Group III has the structural elements of a "template" and the "protection groups". The presence of different structural elements between these two groups of compound indicates that they are different in structure, properties, etc. and thus represent different inventions.

Inventions of Group I (process) and Group II (product) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP §

806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as bead base methods or pin based methods.

Inventions Group I (process) and Group III (product) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as hydrogenation.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 61-63 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

6. Claims 15-16, 18, 49, 51-52, and 54-57 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to ***nonelected species***, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 2/24/03.

7. Applicant's argument with regard to Claims 28, 29, and 33 on the issue of "linking" claim has been fully considered but they are not persuasive for the following reasons.

Applicant contends that Claims 28, 29, and 33 are link to linking Claim 10 and should be considered linking claims. Thus even though Claims 28, 29, and 33 are cancelled it should be

rejoined with claim 10 (i.e. upon allowance of linking Claim 10, Claims 28, 29, and 33 must be examined with this case).

Applicant's arguments are not convincing because Claims 28, 29, and 33 are not considered as linking claims to claim 10.

First, Claim 10 (i.e. Group II) and Claims 28, 29, and 33 (i.e. Group IV) were restricted as distinct inventions as discussed in the restriction mailed on 9/10/2002. The restriction requirement relates Group I and Group II as process of making and product made and it can be shown that the inventions are distinct because the product as claimed (i.e. Group II) can be made by another and materially different process such as a solid phase synthesis using traditional orthogonal protection (see MPEP § 806.05(f)) (i.e. different patentability considerations are involved for each group).

Second, Claims 28, 29, and 33 are product-by-process claims. Claim 28 claimed "*a compound prepared according to the method of claim 10*". Claim 29 claimed "*A multiple antigen peptide prepared according the method of claim 10*". Claim 33 claimed "*A de novo protein prepared according to the method of claim 10*". For the product-by-process claim applicant is directed to MPEP 2113 that states, *"[E]ven though product-by-process claims are limited by and defined by the process,* ***determination of patentability is based on the product itself****. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)*" (i.e. the patentability of the product is not dependent upon the manner in which is produce; unless the process changes

the product e.g., a protein made by a bacteria versus a protein made by a eukaryotic cell - here one will produce a protein with glycosylation and the other will not, therefore, the product is different). Thus different patentability considerations are involved for each group (i.e. Claim 10 (process) and Claims 28, 29, and 33 (product)). Furthermore, it is noted that the claim product of claims 28, 29, and 33 are structurally distinct from each other (i.e. the compound of claim 28, the antigen peptide of claim 29, and the protein of claim 33 are structurally distinct) unless applicant would like to state clearly on record that the compound of claim 28, the antigen peptide of claim 29, and the protein of claim 33 are structurally identical.

Therefore, Claims 28, 29, and 33 are not considered as linking claims to Claim 10 and would not be rejoined with claim 10. Claims 28, 29, and 33 are cancelled by the amendment filed on 2/24/03.

8. Claims 10-14, 17, 19, 48, 50, 53, 58-60, and 62 are treated on the merit in this Office Action.

Withdrawn Rejections

9. In view of applicant's amendments of claims 10-13, 17, and 53, the previous rejection under 35 USC 112, second paragraph, has been withdrawn.

New Rejections – Necessitated by Amendment

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 10-14, 17, 19, 48, 50, 53, and 58-60 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a written description rejection)

The instant claim 10 recites a method. The method comprises steps of (a) "removing a terminal protection unit from each protection group of a uni-chemo protected compound (UCP) so as to form at least one exposed functional group of the uni-chemo protected compound that is not attached to a protection"; (b) "reacting the resulting at least one exposed functional group of the protected template with a first target group"; and (c) "consecutively repeating steps a) and b) to form the a derivatized template". The uni-chemo protected compound comprises a template with two or more functional groups and protection groups attached to the two or more functional groups. The protection groups comprises one or more linearly bonded protection units wherein a first protection group contains at least one protection unit and at least one other protection group contains more protection units than the first protection group.

Figure 2 depict a method scheme showing the concepts of successive UniChemical access to functional groups. Figure 2 illustrates the structural feature of the uni-chemo protected compound that comprises a 'template' with five functional groups. Each functional group has a protection group unit attached and the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit (i.e. the first

functional group would have five protection group units, the next functional group would have four protection group units, etc. until the last functional group would only have protection group unit). A single protection group unit is removed from each of the functional group such that functional group that only has one protection group unit will be expose for reaction. From figure 2, the term "protection group unit" is shown as the same individual compound. However, the specification describes the term "protection group" as having one or more building block units wherein the building block units can be amines (see pg. 8, lines 13-14) or monomer (see pg. 9-12). Thus the terms of "protection group unit", "protection group", and "building block unit" disclosed in both figure 2 and the specification are not clearly define or exemplified. Since the claimed terms of "protection group" and "protection unit" are not clearly define or exemplified in the specification, it is interpreted to be synonymous with the term "protection group unit" of figure 2. The presently claimed method differs from the method scheme depicted in figure 2 in 1) the claimed structure of the uni-chemo protected compound, and 2) the step of removing the protection unit. The claimed structure of the uni-chemo protected (UPC) compound differs from the structure of the UPC compound depicted in figure 2 in that the claimed UPC compound does not claim that a) each functional group of the template have a protection group unit; b) the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit; and c) the directional positioning of the protection group unit on the functional group because there are several different ways in which the limitation that the protection group unit is linearly bonded. Linearly bonded protection group unit would include attachment such as each functional group having a protection group unit or attachment of the protection group units on top of each other. The step of removing the

protection unit depicted in figure 2 differs from the claimed step of removing the protection unit since the claimed UPC compound does not claim that the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit a single protection group unit (i.e. a terminal protection group unit) is removed from each of the functional group such that functional group that only has one protection group unit will be expose for reaction. Thus the specification does not teach the claimed method.

The presently claimed method encompasses a broad genus. The scope of this claim includes an infinite number of methods for producing an infinite number of structural variants (i.e., derivatized template) wherein no distinguishing structural attributes are provided for the members of the derivatized template. The specification and claims do not place any limit on the number of atoms, the types of atoms, or the manner in which said atoms might be connected to form the derivatized template. The claimed template has multiple functional groups that are protected by protecting groups has no structure. Although the specification discloses many possible type of template with multiple functional groups (see pages 6-7) and the type of protecting group (see pages 9-12) that "might" be used to form the "derivatized template", the specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these derivatized templates share. Consequently, it is not possible to determine *a priori* which compounds are use as template to derive the "derivatized template", because there is no common structural attributes of the template that lead to ***all*** of these potential "derivatized template" i.e., there is no teaching that would allow a person of skill in the art to determine *a priori* ***all*** the different types of compounds that should be included in this genus from the few examples provide by applicants. The general knowledge and level of skill in the art do not supplement the

omitted description because specific, not general, guidance is what is needed. Since the disclosure fails to describe the common attributes or characteristics that identify ***all*** of the members of the genus or even a substantial portion thereof, and because the genus is enormous and highly variant, listing examples like oligosaccharide, peptide, and polymer solid support that are known in the literature (see specification, pages 6-7) is insufficient to teach the entire genus. Consequently, one of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe this enormous genus. Thus, applicant was not in possession of the claimed genus.

The specification disclosure does not sufficiently teach the broad genus of "a uni-chemo protected compound" for use in the presently claimed method. The claimed "a uni-chemo protected compound" would encompass an infinite number of compounds such as amino acids with the amine functionality and/or carboxylic acid functionality are being protected by compounds such as dimethoxybenzion. Since no distinguishing structural attributes are provided for the claimed "a uni-chemo protected compound" other than that the a uni-chemo protected compound comprises a template and protection groups, there in no 'core structure' is provided for the claimed template for use in the presently claimed method. Although, the specification discloses a uni-chemo protected compound containing a pentalysine template with five different length protection group of *N*-sec-butyl-glycine (figure 1; examples 1-4; pg. 13, lines 4-7), the specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these a uni-chemo protected compound shares. Thus the specification does not teach the claimed method.

The specification disclosure does not sufficiently teach the broad genus of "template" for use in the presently claimed method. The claimed "template" would encompass an infinite number of compounds such as amino acids and apparatus such as a resin. Since no distinguishing structural attributes are provided for the claimed "template" other than that the template comprises two or more functional groups, there in no 'core structure' is provided for the claimed template for use in the presently claimed method. Although, the specification listed all the possible type of template with multiple functional groups (see Specification, pages 6-7), the specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these template shares. Thus the specification does not teach the claimed method.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.).

With the exception of method of figure 2 disclosed by the specification, the skilled artisan cannot envision the method for forming a derivatized template. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405 held that:

...To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); In *re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966.

Additionally, Cf. University of Rochester v G.D. Searle & Co., Inc., Monsanto Company, Pharmacia Corporation, and Pfizer Inc., No. 03-1304, 2004 WL 260813 (Fed. Cir., Feb. 13, 2004) held that:

Regardless whether a compound is claimed per se or a method is claimed that entails the use of the compound, the inventor cannot lay claim to that subject matter unless he can provide a description of the compound sufficient to distinguish infringing compounds from non-infringing compounds, or infringing methods from non-infringing methods.

In the present instance, the specification does not teach claimed method. Therefore, only the method of figure 2, but not the full breadth of the claim method meets the written description provision of 35 U.S.C 112, first paragraph.

12. Claim 62 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a written description rejection)

The instant claim 62 recites a method. The method comprises steps of (a) "preparing a uni-chemo protected compound (UCP)"; (b) "removing a terminal protection unit from each protection group of a uni-chemo protected compound (UCP) so as to form at least one exposed functional group of the uni-chemo protected compound that is not attached to a protection"; (c) "reacting the resulting at least one exposed functional group of the protected template with a first target group"; and (d) "consecutively repeating steps a) and b) to form the a derivatized template". The uni-chemo protected compound comprises a template with two or more functional groups and protection groups attached to the two or more functional groups. The protection groups comprises one or more linearly bonded protection units wherein a first protection group contains at least one protection unit and at least one other protection group contains more protection units than the first protection group.

Figure 2 depict a method scheme showing the concepts of successive UniChemical access to functional groups. Figure 2 illustrates the structural feature of the uni-chemo protected compound that comprises a 'template' with five functional groups. Each functional group has a protection group unit attached and the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit (i.e. the first functional group would have five protection group units, the next functional group would have four protection group units, etc. until the last functional group would only have protection group unit). A single protection group unit is removed from each of the functional group such that functional group that only has one protection group unit will be expose for reaction. From figure 2, the term "protection group unit" is shown as the same individual compound. However, the specification describes the term "protection group" as having one or more building block units

wherein the building block units can be amines (see pg. 8, lines 13-14) or monomer (see pg. 9-12). Thus the terms of "protection group unit", "protection group", and "building block unit" disclosed in both figure 2 and the specification are not clearly define or exemplified. Since the claimed terms of "protection group" and "protection unit" are not clearly define or exemplified in the specification, it is interpreted to be synonymous with the term "protection group unit" of figure 2. The presently claimed method differs from the method scheme depicted in figure 2 in 1) the claimed structure of the uni-chemo protected compound, and 2) the step of removing the protection unit. The claimed structure of the uni-chemo protected (UPC) compound differs from the structure of the UPC compound depicted in figure 2 in that the claimed UPC compound does not claim that a) each functional group of the template have a protection group unit; b) the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit; and c) the directional positioning of the protection group unit on the functional group because there are several different ways in which the limitation that the protection group unit is linearly bonded. Linearly bonded protection group unit would include attachment such as each functional group having a protection group unit or attachment of the protection group units on top of each other. The step of removing the protection unit depicted in figure 2 differs from the claimed step of removing the protection unit since the claimed UPC compound does not claim that the number of protection group unit on each functional group varies such that there is a gradual decrease in the number of protection group unit a single protection group unit (i.e. a terminal protection group unit) is removed from each of the functional group such that functional group that only has one protection group unit will be expose for reaction. Thus the specification does not teach the claimed method.

The presently claimed method encompasses a broad genus. The scope of this claim includes an infinite number of methods for producing an infinite number of structural variants (i.e., derivatized template) wherein no distinguishing structural attributes are provided for the members of the derivatized template. The specification and claims do not place any limit on the number of atoms, the types of atoms, or the manner in which said atoms might be connected to form the derivatized template. The claimed template has multiple functional groups that are protected by protecting groups has no structure. Although the specification discloses many possible type of template with multiple functional groups (see pages 6-7) and the type of protecting group (see pages 9-12) that "might" be used to form the "derivatized template", the specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these derivatized templates share. Consequently, it is not possible to determine *a priori* which compounds are use as template to derive the "derivatized template", because there is no common structural attributes of the template that lead to ***all*** of these potential "derivatized template" i.e., there is no teaching that would allow a person of skill in the art to determine *a priori* ***all*** the different types of compounds that should be included in this genus from the few examples provide by applicants. The general knowledge and level of skill in the art do not supplement the omitted description because specific, not general, guidance is what is needed. Since the disclosure fails to describe the common attributes or characteristics that identify ***all*** of the members of the genus or even a substantial portion thereof, and because the genus is enormous and highly variant, listing examples like oligosaccharide, peptide, and polymer solid support that are known in the literature (see specification, pages 6-7) is insufficient to teach the entire genus. Consequently, one of skill in the art would reasonably conclude that the disclosure fails to

provide a representative number of species to describe this enormous genus. Thus, applicant was not in possession of the claimed genus.

The specification disclosure does not sufficiently teach the broad genus of "a uni-chemo protected compound" for use in the presently claimed method. The claimed "a uni-chemo protected compound" would encompass an infinite number of compounds such as amino acids with the amine functionality and/or carboxylic acid functionality are being protected by compounds such as dimethoxybenzion. Since no distinguishing structural attributes are provided for the claimed "a uni-chemo protected compound" other than that the a uni-chemo protected compound comprises a template and protection groups, there in no 'core structure' is provided for the claimed template for use in the presently claimed method. Although, the specification discloses a uni-chemo protected compound containing a pentalysine template with five different length protection group of *N*-sec-butyl-glycine (figure 1; examples 1-4; pg. 13, lines 4-7), the specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these a uni-chemo protected compound shares. Thus the specification does not teach the claimed method.

The specification disclosure does not sufficiently teach the broad genus of "template" for use in the presently claimed method. The claimed "template" would encompass an infinite number of compounds such as amino acids and apparatus such as a resin. Since no distinguishing structural attributes are provided for the claimed "template" other than that the template comprises two or more functional groups, there in no 'core structure' is provided for the claimed template for use in the presently claimed method. Although, the specification listed all the possible type of template with multiple functional groups (see Specification, pages 6-7), the

specification and claims do not provide ***any*** guidance as to what structural features ***all*** of these template shares. Thus the specification does not teach the claimed method.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.).

With the exception of method of figure 2 disclosed by the specification, the skilled artisan cannot envision the method for forming a derivatized template. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405 held that:

> ...To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); In *re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966.

In the present instance, the specification does not teach claimed method. Therefore, only the method of figure 2, but not the full breadth of the claim method meets the written description provision of 35 U.S.C 112, first paragraph.

13. Claims 10-14, 17, 19, 48, 50, 53, 58-60, and 62 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a new matter rejection.)

The added material of the newly amended claim 10 and the new claim 62 has no clear support in the specification and the claims as originally filed. The specification does not teach the recitation of the term "***linearly bonded*** *protection unit*". The specification in page 6 disclosed '*The protection groups comprise building block units linked together*' (lines 8-9) is not support for '***linearly bonded*** *protection unit*'. Accordingly, there is lack of descriptive support for the above-identified term, wherein the component of the claimed invention is other than those recited supra.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 10-14, 17, 19, 48, 50, 53, 58-60, and 62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) The term "protection unit" is vague and indefinite because it is unclear if it is referring to an atom or monomer. Additionally, the specification did not define or exemplified the term "protection unit".

b) The term "linearly bonded" is vague because it is unclear what constitutes the metes and bounds of 'linearly' (i.e. what is the distinction between "linearly bonded" and "non-linearly bonded"? Is it structure, positioning, or location?).

c) The term "terminal protection unit" is vague because it is unclear what constitutes the metes and bounds of "terminal protection unit". What is the distinction between the structure wherein each functional group has a protection unit (i.e. all protection unit would be considered "terminal protection unit") and the structure wherein the protection unit are stacked on top of each other?

d) Step (d) of claim 62 is confusing because it is unclear how the derivatized template is form by consecutively repeating step (a) that is preparing a uni-chemo protected compound and step (b), which is removing a terminal protection unit.

Maintained Rejections

Claim Rejections - 35 USC § 102

16. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

17. Claims 10-12, 17, 19, 48, and new claim 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Sundberg et al. (US Patent 5,624,711).

Sundberg et al. disclose a method for the synthesis of peptides, oligonucleotides, or other small molecules (target compounds) on a solid support (template; refers to claim 17) (col. 1, lines 64-67). The solid support comprise of polymers with amide functional groups (col. 14, lines 49-53). These functional groups are synthesis initiation sites, which are protected by protecting groups (col. 12, lines 33-46; col. 4, lines 6-23). Thus the method of Sundberg et al. anticipates the presently claimed method.

Additionally, Sundberg et al. disclose the claimed method step of preparing a uni-chemo protected compound comprising a template and protection groups of the new claim 62 (figures 16-17; col. 19, lines 20-45).

Response to Arguments

18. Applicant's arguments directed to the rejection under 35 USC 102(b) as being anticipated by Sundberg et al. (US Patent 5,624,711) for claims 10-12, 17, 19, 48, and new claim 62 were considered but they are not persuasive for the following reasons.

Applicant contends that the method of Sundberg et al. does not anticipate the presently claimed method because the protection group of Sundberg et al. is "*not comprised of linearly bonded protection unit that are consecutively removed*". Thus the method of Sundberg et al. does not anticipate the presently claimed method.

Applicant's arguments are not convincing since the method of Sundberg et al. does anticipate the presently claimed method because the protection group of Sundberg et al. is comprised of linearly bonded protection unit (see figure 16-17) and are consecutively removed

(col. 18, lines 34-44; col. 19, lines 46-58). Thus the method of Sundberg et al. does anticipate the presently claimed method.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the structural features of the uni-chemo protected compound depicted in figure 2; and that the methods are "fundamentally based on uniform reactions to remove the protection groups," such that "the requirement of reaction compatibility with other parts of a molecule increases linearly with the number of protected functional groups" (page 15, lines 5-9) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

19. Claims 10-12, 14, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomalia et al. (US Patent 5,714,166).

Tomalia et al. disclose a cascade reaction method for the unimolecular assemblage of dendrimer (target compound) (col. 3, lines 4-65; col. 11, lines 36-67). The method comprises a) an initiator core (template); b) an interior layers composed of repeating unit (target group); c) an exterior surface of terminal functionality (functional group) (col. 11, lines 45-50; col. 12, lines 32-55; col. 12, lines 56-67 to col. 13, lines 1-4); d) protecting groups to protect the terminal functionality and control the assemblage of the repeating unit (col. 13, lines 17-35; col. 25, lines 34-38; col. 26, lines 23-30). The protecting groups are removed by a chemical reaction. The

functional group comprise of amino group (col. 13, lines 17-35) (refers to claim 14). Thus the method of Tomalia et al. anticipates the presently claimed method.

Response to Arguments

20. Applicant's arguments directed to the rejection under 35 USC 102(b) as being anticipated by Tomalia et al. (US Patent 5,714,166) for claims 10-12, 14, and 53 were considered but they are not persuasive for the following reasons.

Applicant contends that the method of Tomalia et al. does not anticipate the presently claimed method because the protection group of Tomalia et al. "*is not comprised of linearly bonded protection unit that are consecutively removed*". Thus the method of Tomalia et al. does not anticipate the presently claimed method.

Applicant's arguments are not convincing since the method of Tomalia et al. does anticipate the presently claimed method because the protection group of Tomalia et al. is comprised of linearly bonded protection unit and are consecutively removed (col. 2, lines 58-65; col. 13, lines 17-35). Thus the method of Tomalia et al. does anticipate the presently claimed method.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the structural features of the uni-chemo protected compound depicted in figure 2; and that the methods are "fundamentally based on uniform reactions to remove the protection groups," such that "the requirement of reaction compatibility with other parts of a molecule increases linearly with the number of protected functional groups" (page 15, lines 5-9) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

21. Claims 10-12, 14, and 53 rejected under 35 U.S.C. 102(b) as being anticipated by Newkome et al. (US Patent 5,886,126).

Newkome et al. disclose a method of a cascade polymeric synthesis wherein the method steps includes the dendrimerizing a mixture of branched monomers on a substrate (template) wherein the monomers (target group) have heterogeneously functionalized branches and homogenous connectivity to the substrate (col. 2, lines 60-65). The dendrimerizing step comprise of reacting the monomer mixture with the substrate surface, which is comprised of protected functionalities (col. 4, lines 62-67 to col.5, lines 1-18). The functional group of the substrate comprises of amino group (col. 3, lines 17-29). The complimentary protected groups form a linkage between the substrate surface and the monomers (col. 4, line 67 to col. 5, lines 1-7) and the non-complimentary protected groups are removed by a chemical reaction (col. 5, lines 30-40). Thus the method of Newkome et al. anticipates the presently claimed method.

Response to Arguments

22. Applicant's arguments directed to the rejection under 35 USC 102(b) as being anticipated by Newkome et al. (US Patent 5,886,126) for claims 10-12, 14, and 53 were considered but they are not persuasive for the following reasons.

Applicant argues that the method of Newkome et al. does not anticipate the presently claimed method because the protection group of Newkome et al. "*is not comprised of linearly*

bonded protection unit that are consecutively removed". Thus the method of Newkome et al. does not anticipate the presently claimed method.

Applicant's arguments are not convincing since the method of Newkome et al. does anticipate the presently claimed method because the protection group of Newkome et al. is comprised of linearly bonded protection unit (see figure 1B) and are consecutively removed (col. 5 lines 19-29). Thus the method of Newkome et al. does anticipate the presently claimed method.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the structural features of the uni-chemo protected compound depicted in figure 2; and that the methods are "fundamentally based on uniform reactions to remove the protection groups," such that "the requirement of reaction compatibility with other parts of a molecule increases linearly with the number of protected functional groups" (page 15, lines 5-9) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

23. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

24. Claims 10-12, 14, 17, 19, 48, 50, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomalia et al. (US Patent 5,714,166) and Shchepinov et al. (US Patent 6,455,071 B1: *filing 08/27/1997*).

Tomalia et al. disclose a cascade reaction method for the unimolecular assemblage of dendrimer (target compound) (col. 3, lines 4-65; col. 11, lines 36-67). The method comprises a) an initiator core (template); b) an interior layers composed of repeating unit (target group); c) an exterior surface of terminal functionality (functional group) (col. 11, lines 45-50; col. 12, lines 32-55; col. 12, lines 56-67 to col. 13, lines 1-4); d) protecting groups to protect the terminal functionality and control the assemblage of the repeating unit (col. 13, lines 17-35; col. 25, lines 34-38; col. 26, lines 23-30). The protecting groups are removed by a chemical reaction. The functional group comprise of amino group (col. 13, lines 17-35) (refers to claim 14).

The method of Tomalia et al. does not expressly disclose that the template comprise of a solid support.

Shchepinov et al. disclose a method of assembling branched structures from building block and a plurality of blocked functional groups at the outer ends of the structure (col. 1, lines 54-64). The core molecule comprise of at least two sites wherein chemical growth is initiated and attachment to a solid support (col. 2, lines 44-56). The material of the solid support includes plastic (col. 4, lines 15-17).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the template as a solid support as taught by Shchepinov et al. in the method of Tomalia et al. One of ordinary skill in the art would have been motivated to include the template as a solid support in the method of Tomalia et al. for the advantage of providing a segregated surface into which defined areas to direct the chemical reaction (col. 3, lines 62-65) since both Tomalia et al. and Shchepinov et al. disclose the method of dendrimeric synthesis (Tomalia: col. 11, lines 36-67; Shchepinov: col. 1, lines 10-40). One of ordinary skill

in the art would have reasonably expectation of success in the combination of Tomalia et al. and Shchepinov et al. because Shchepinov et al. disclose examples of synthesis of dendrimeric structures from solid support (col. 12 to col. 14; figures 4-6).

Response to Arguments

25. Applicant's arguments directed to the rejection under 35 USC 103(a) as being unpatentable over Tomalia et al. (US Patent 5,714,166) and Shchepinov et al. (US Patent 6,455,071 B1: *filing 08/27/1997*) for claims 10-12, 14, 17, 19, 48, 50, and 53 were considered but they are not persuasive for the following reasons.

Applicant argues that the method combination of Tomalia et al. and Shchepinov et al. is not obvious over the presently claimed method because neither Tomalia et al. and Shchepinov et al. discloses that the protection group is comprised of linearly bonded protection unit and are consecutively removed. Thus the method combination of Tomalia et al. and Shchepinov et al. is not obvious over the presently claimed.

Applicant's arguments are not convincing since the method combination of Tomalia et al. and Shchepinov et al. is obvious over the presently claimed because the protection group of Tomalia et al. is comprised of linearly bonded protection group and are consecutively removed (col. 2, lines 58-65; col. 13, lines 17-35). Thus the method combination of Tomalia et al. and Shchepinov et al. is obvious over the presently claimed.

26. Claims 10-12, 14, 17, 19, 48, 50, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newkome et al. (US Patent 5,886,126) and Shchepinov et al. (US Patent 6,455,071 B1: *filing 08/27/1997*).

Newkome et al. disclose a method of a cascade polymeric synthesis wherein the method steps includes the dendrimerizing a mixture of branched monomers on a substrate (template) wherein the monomers (target group) have heterogeneously functionalized branches and homogenous connectivity to the substrate (col. 2, lines 60-65). The dendrimerizing step comprise of reacting the monomer mixture with the substrate surface, which is comprised of protected functionalities (col. 4, lines 62-67 to col.5, lines 1-18). The functional group of the substrate comprises of amino group (col. 3, lines 17-29). The complimentary protected groups form a linkage between the substrate surface and the monomers (col. 4, line 67 to col. 5, lines 1-7) and the non-complimentary protected groups are removed by a chemical reaction (col. 5, lines 30-40). Thus the method of Newkome et al. anticipates the presently claimed method.

The method of Newkome et al. does not expressly disclose that the template comprise of a solid support.

Shchepinov et al. disclose a method of assembling branched structures from building block and a plurality of blocked functional groups at the outer ends of the structure (col. 1, lines 54-64). The core molecule comprise of at least two sites wherein chemical growth is initiated and attachment to a solid support (col. 2, lines 44-56). The material of the solid support includes plastic (col. 4, lines 15-17).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the template as a solid support as taught by Shchepinov et al. in the method of Newkome et al. One of ordinary skill in the art would have been motivated to include the template as a solid support in the method of Newkome et al. for the advantage of providing a segregated surface into which defined areas to direct the chemical reaction (col. 3,

lines 62-65) since both Newkome et al. and Shchepinov et al. disclose the method of dendrimeric synthesis (Newkome: col. 1, lines 11-17; Shchepinov: col. 1, lines 10-40). One of ordinary skill in the art would have reasonably expectation of success in the combination of Newkome et al. and Shchepinov et al. because Shchepinov et al. disclose examples of synthesis of dendrimeric structures from solid support (col. 12 to col. 14; figures 4-6).

Response to Arguments

27. Applicant's arguments directed to the rejection under 35 USC 103(a) as being unpatentable over Newkome et al. (US Patent 5,886,126) and Shchepinov et al. (US Patent 6,455,071 B1: *filing 08/27/1997*) for claims 10-12, 14, 17, 19, 48, 50, and 53 were considered but they are not persuasive for the following reasons.

Applicant alleges that the method combination of Newkome et al. and Shchepinov et al. is not obvious over the presently claimed method because neither Newkome et al. and Shchepinov et al. discloses that the protection group is comprised of linearly bonded protection unit and are consecutively removed. Thus the method combination of Newkome et al. and Shchepinov et al. is not obvious over the presently claimed.

Applicant's arguments are not convincing since the method combination of Tomalia et al. and Shchepinov et al. is obvious over the presently claimed because the protection group of Newkome et al. are comprises of linearly bonded protection group (see figure 1B) and are consecutively removed (col. 5 lines 19-29). Thus the method combination of Newkome et al. and Shchepinov et al. is obvious over the presently claimed.

Conclusion

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MY-CHAU T TRAN whose telephone number is 571-272-0810. The examiner can normally be reached on Mon.: 8:00-2:30; Tues.-Thurs.: 7:30-5:00; Fri.: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDREW WANG can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mct
July 23, 2004

ANDREW WANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600